

REMARKS

The Office Action dated November 28, 2007, has been received and carefully noted. The following remarks are submitted as a full and complete response thereto.

Claims 1-4 and 7-11 are currently pending in the application, of which claims 1 and 7-8 are independent claims.

In view of the following remarks, Applicant respectfully requests reconsideration and timely withdrawal of the pending claim rejections for the reasons discussed below.

Claim Rejections under 35 U.S.C. §103(a)

Claims 1, 7, and 8

The Office Action rejected claims 1 and 7-8 under 35 U.S.C. §103(a) as being allegedly unpatentable as obvious over Matsumoto, *et al.* (U.S. Patent No. 7,171,185) (“Matsumoto”) in view of Tomita (U.S. Patent No. 7,120,416) (“Tomita”). Applicant traverses the aforementioned rejections for at least the following reasons.

Applicant respectfully submits that Matsumoto is not proper prior art because it fails to qualify as a 35 U.S.C. §102 reference. Specifically, Matsumoto fails to qualify as 35 U.S.C. §102(e) prior art reference.

The Examiner is respectfully directed to the following:

A person shall be entitled to a patent unless –

(e) [Effective November 29, 2000] the invention was described in... (2) a patent granted on an application for patent by another in the United States before the invention by the

applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for the purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language (35 U.S.C. §102(e)).

Applicant respectfully submits that Matsumoto was filed as a PCT Application, PCT/JP03/00783, on January 28, 2003. Applicant notes that the international application designated the United States, but was not published under Article 21(2) of such treaty in the English language. Therefore, Matsumoto does not satisfy the requirements provided in 35 U.S.C. §102(e); and thus, Matsumoto is not a proper 35 U.S.C. §102(e) reference.

Applicant respectfully submits that Tomita fails to disclose or suggest every feature recited in claims 1 and 7-8. Therefore, Applicant respectfully submits that claims 1 and 7-8, and the claims that depend therefrom, are in condition for allowance.

However, in the case that the deficiencies of Matsumoto are remedied, Applicant respectfully submits that the claims recite subject matter that is neither disclosed nor suggested in the combination of Matsumoto and Tomita.

Claim 1, upon which claims 2-4 depend, recites a method. The method includes filtering a signal with a bandpass filter, measuring image rejection and DC offset rejection of the filtered signal, and adjusting a center frequency of the bandpass filter. The filtering, measuring and adjusting is repeated until a compromise between DC offset rejection and image rejection is achieved. The compromise is reached when the DC

offset rejection is within acceptable tolerances and image rejection meets minimum pre-specified requirements.

Claim 7 recites a system. The system includes means for filtering a signal, means for measuring image rejection and DC offset rejection of the filtered signal, and means for adjusting a center frequency of the means for filtering. The filtering, measuring and adjusting is repeated until a compromise between DC offset rejection and image rejection is achieved. The compromise is reached when the DC offset rejection is within acceptable tolerances and image rejection meets minimum pre-specified requirements.

Claim 8, upon which claims 9-11 depend, recites a system. The system includes bandpass filter capable of filtering a received signal and capable of having a center frequency adjusted, and at least one measurement circuit, communicatively coupled to the filter, capable of measuring image rejection and DC offset rejection of the filtered signal. The bandpass filter and at least one measurement circuit continue to filter, measure and adjust the center frequency until a compromise between DC offset rejection and image rejection is achieved. The compromise is reached when the DC offset rejection is within acceptable tolerances and image rejection meets minimum pre-specified requirements.

Applicant respectfully submits that certain embodiments of the present invention provide non-obvious advantages. Specifically, certain embodiments of the present invention relate to enabling a compromise between DC offset rejection and image rejection. Thus, certain embodiments provide a technical advantage in that a method

includes filtering a signal with a bandpass filter, measuring image rejection and DC offset rejection of the filtered signal, and adjusting a center frequency of the bandpass filter to enable the compromise between the DC offset rejection and the image rejection.

As will be discussed below, Matsumoto in view of Tomita fails to disclose or suggest every feature recited in claims 1 and 7-8, and therefore fails to provide the advantages and the features of the claims discussed above.

Matsumoto is directed to a direct conversion receiver and DC offset reducing method that enables a reduced DC offset caused by Automatic Gain Control (AGC) and further enables accurate and fast AGC while eliminating the problem with occurrence of DC offset (Matsumoto, Abstract; col. 2, lines 46-51).

Tomita is directed to a semiconductor device for demodulating a received signal in a satisfactory manner when the frequency of the receive signal deviates. The semiconductor device includes a receiver having a reference oscillator. The receiver uses a reference signal generated by the reference oscillator to receive a signal in a predetermined channel bandwidth. The semiconductor device includes a local oscillator for generating a local signal having a local frequency (Tomita, Abstract; col. 2, lines 28-33).

Applicant respectfully submits that the Office Action fails to establish a *prima facie* case of obviousness. Assuming *arguendo* that the teachings of Matsumoto and the teachings of Tomita could be combined, the combination of Matsumoto and Tomita fails to disclose or suggest every feature recited in claim 1, and similarly recited in claims 7

and 8. As noted in the Office Action on page 2, Matsumoto fails to disclose or suggest, at least, “filtering a signal with a bandpass filter...and adjusting a center frequency of the bandpass filter” as recited in claim 1, and similarly recited in claims 7 and 8.

Specifically, Matsumoto discloses a direct conversion receiver that enables a reduced DC offset caused by automatic gain control and that further enables an accurate and fast automatic gain control while eliminating the problem with occurrence of DC offset. Matsumoto further discloses a period is detected which has a high possibility for an increase in the DC offset. A time constant of a high-pass filter for cutting off the DC offset component existing on a signal path is made smaller, during the period, than that in general operation, causing rapid convergence of a transient response of the signal passed through the high-pass filter. Accordingly, the DC offset is reduced to be negligible in the actual operation of the circuitry (Matsumoto, col. 2, lines 46-62).

Further, Matsumoto discloses that only when a large DC offset occurs, a cut-off frequency of the high-pass filter is increased to promptly converge the occurred DC offset to a level similar to a level in a steady state, while the cut-off frequency of the high-pass filter is kept in a low frequency except at an above period (Matsumoto, col. 3, lines 15-21). In this way, by controlling switching of the time constant of the high-pass filter, it is possible to effectively suppress DC offsets and to perform fast and accurate automatic gain control while eliminating deterioration of reception accuracy (Matsumoto, col. 3, lines 22-27).

Hence, Matsumoto focuses specifically on the control of a high-pass filter for suppressing DC offsets and for controlling automatic gain control to eliminate deterioration of reception accuracy.

In contrast, Tomita discloses a semiconductor device for demodulating a received signal in a satisfactory manner when the frequency of the received signal deviates. Tomita discloses that during wireless communications, if the frequency of a received signal from a receiver is not included in a range of a channel selected band pass filter, the received signal is distorted. Tomita discloses increasing the number of stages in a band pass filter to prevent a decrease in the receiving capability with respect to frequencies that are not included in a channel. By increasing the number of stages in the band pass filter, the passing bandwidth is broadened to include predetermined tolerated frequencies (Tomita, col. 1, lines 35-49).

Hence, Tomita focuses specifically on increasing the number of stages in a band pass filter to prevent a decrease in the receiving capability with respect to frequencies that are not included in a channel by broadening a passing bandwidth to include predetermined tolerated frequencies.

Therefore, assuming *arguendo* that the teachings of Matsumoto and Tomita could be combined, the combination of Matsumoto and Tomita fails to disclose or suggest the features recited in claim 1, and similarly recited in claims 7 and 8, specifically “adjusting the center frequency.”

Additionally, the combination of Matsumoto and Tomita fails to disclose or suggest, at least, “measuring image rejection and DC offset rejection of the filtered signal,” where the “filtered signal” refers to a bandpass filtered signal as recited in claim 1. As previously noted, Matsumoto specifically discloses control of a high-pass filter for suppressing DC offsets and for controlling automatic gain control to eliminate deterioration of reception accuracy. Therefore, even if the bandpass filter disclosed in Tomita were incorporated into the teachings of Matsumoto, the step of “measuring image rejection and DC offset rejection of the filtered signal” would refer to the measurement of the high-pass filter in order for Matsumoto to operate as intended for suppressing DC offsets and for controlling automatic gain control to eliminate deterioration of reception accuracy. Therefore, the combination of Matsumoto and Tomita would not disclose or suggest, at least, “measuring image rejection and DC offset rejection of the filtered signal,” where the “filtered signal” refers to a bandpass filtered signal as recited in claim 1.

Therefore, Applicants respectfully submit that the combination of Matsumoto and Tomita further fails to disclose or suggest, at least “wherein the filtering, measuring, and adjusting is repeated until a compromise between DC offset rejection and image rejection is achieved, and wherein the compromise is reached when the DC offset rejection is within acceptable tolerances and image rejection meets minimum pre-specified requirements” because the “filtered signal” would not refer to a bandpass filtered signal as recited in claim 1.

Therefore, the Office Action fails to establish a *prima facie* case of obviousness with respect to the features recited in claim 1, and similarly recited in claims 7 and 8.

Additionally, there is no reason to replace the “high-pass filter” with a “bandpass filter.” Such a modification of the teachings of Matsumoto would add complexity to the system disclosed in Matsumoto.

Therefore, Applicant respectfully requests withdrawal of the rejections of claims 1 and 7-8 under 35 U.S.C. §103(a), and respectfully submits that claims 1 and 7-8, and the claims that depend therefrom, are now in condition for allowance.

Claims 2-4 and 9-11

The Office Action rejected claims 2-4 and 9-11 under 35 U.S.C. §103(a) as being allegedly unpatentable as obvious over Matsumoto, *et al.* (U.S. Patent No. 7,171,185) (“Matsumoto”) in view of Tomita (U.S. Patent No. 7,120,416) (“Tomita”) in view of Vinn, *et al.* (U.S. Patent No. 6,441,682) (“Vinn”). Applicant respectfully submits that the claims recite subject matter that is neither disclosed nor suggested in the combination of Matsumoto, Tomita, and Vinn.

Matsumoto and Tomita were discussed above. Vinn is directed to an improved implementation of an active-RC polyphase band-pass filter with a transconductor cross-coupling between filter sections for use in active polyphase filter design (Vinn, Abstract; col. 7, line 38, to col. 8, line 55).

As previously noted, the Office Action fails to establish a *prima facie* case of obviousness with respect to the features recited in claim 1, and similarly recited in claims 7 and 8. Accordingly, Matsumoto in view of Tomita fails to disclose or suggest every feature recited in claims 1 and 7-8. Vinn fails to cure the deficiencies of Matsumoto and Tomita. Specifically, Vinn fails to disclose or suggest, at least “measuring image rejection and DC offset rejection of the filtered signal...wherein the filtering, measuring and adjusting is repeated until a compromise between DC offset rejection and image rejection is achieved, and wherein the compromise is reached when the DC offset rejection is within acceptable tolerances and image rejection meets minimum pre-specified requirements,” where the “filtered signal” refers to a bandpass filtered signal, as recited in claim 1, and similarly recited in claims 7 and 8. Accordingly, Matsumoto in view of Tomita, and further in view of Vinn, fails to disclose or suggest every feature recited in claims 1 and 7-8.

Claims 2-4 depend from claim 1. Claims 9-11 depend from claim 8. Accordingly, claims 2-4 and 9-11 should be allowable for at least their dependency upon an allowable base claim, and for the specific limitations recited therein.

Therefore, Applicant respectfully requests withdrawal of the rejections of claims 2-4 and 9-11 under 35 U.S.C. §103(a), and respectfully submits that claims 1, 7, and 8, and the claims that depend therefrom, are now in condition for allowance.

CONCLUSION

In conclusion, Applicant respectfully submits that Matsumoto, Tomita, and Vinn, alone or in combination, fail to disclose or suggest every claim feature recited in claims 1-4 and 7-11. The distinctions previously noted are more than sufficient to render the claimed invention unobvious. It is therefore respectfully requested that all of claims 1-4 and 7-11 be allowed, and this present application be passed to issuance.

If for any reason the Examiner determines that the application is not now in condition for allowance, it is respectfully requested that the Examiner contact, by telephone, Applicant's undersigned representative at the indicated telephone number to arrange for an interview to expedite the disposition of this application.

In the event this paper is not being timely filed, Applicant respectfully petitions for an appropriate extension of time. Any fees for such an extension together with any additional fees may be charged to Counsel's Deposit Account 50-2222.

Respectfully submitted,



Brad Y. Chin
Registration No. 52,738

Customer No. 32294
SQUIRE, SANDERS & DEMPSEY LLP
14TH Floor
8000 Towers Crescent Drive
Tysons Corner, Virginia 22182-2700
Telephone: 703-720-7800
Fax: 703-720-7802
BYC:dlh